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Dewbowski are immensely more valuable now than when they were made many years ago, by reason of changes in the sidereal heavens which have since intervened; and all precise work such as that now being done at the Flower Observatory is assured of a lasting and honorable place in the history of science. Scientific research prosecuted for its own sake is among the most noble of intellectual pursuits, and the University of Pennsylvania is much to be congratulated on the distinguished place it is acquiring in the astronomical world.

T. J. J. SEE.

WASHINGTON, D. C.

A History of the Precious Metals from the Earliest Times to the Present Day. By ALEX. DEL MAR. Second edition, revised. New York, Cambridge Encyclopedia Co. 1902. 8vo. Illustrated. Pp. xxii + 480, 1-9.

The first edition of this remarkable work was published at London in 1880 and has long since been exhausted; meanwhile the author, in his profession of mining engineer, has visited many remote sources of the precious metals and has secured at first hand new material which has caused the volume to be entirely rewritten. This history is prepared by a profound student, from the point of view of the antiquarian, the archeologist and of the metallurgist, as well as the political economist, and deals with the exploration of the entire surface of the globe for gold and silver from the earliest record of mankind to the present day; copper, tin and the other heavy metals are only incidentally treated. The author is particularly well qualified for this vast undertaking, having already published several serious studies on money, its history, its science and its bearing on the progress of civilization, and having held positions of authority under the United States government, Director of the United States Bureau of Statistics, Mining Commissioner, and member of the International Congresses which met at Turin and at St. Petersburg. He is now engaged on 'The Romance of the Precious Metals' and 'The Politics of Money,' both of which are well advanced.

Mr. Del Mar maintains that the principal motive which has led to the dominion of the earth

by civilized races is the desire for the precious metals, rather than geographical research or military conquest; that the occurrence of gold has invited commerce, and the latter has been followed by invasion and eventually permanent occupation. With these facts in mind he portrays the stupendous power exerted by the quest for the precious metals from the beginnings of history in India, Persia, Egypt, Greece, Italy, Spain and the Western Hemisphere. He depicts very vividly the painful ways in which each gold-producing country has been mercilessly plundered by more powerful neighbors, saying that 'mining is slow work compared with plundering.' He also shows elsewhere that mining is generally more expensive than plundering, except where forced labor and slavery is employed. And to illustrate the latter point he claims that 'since the discovery of America the European world has acquired 19,500 and odd millions of dollars, of which 1,000 millions were obtained by conquest, 9,500 millions by slavery and 9,000 millions chiefly by free mining labor.'

Recognizing these sources of the precious metals he is decidedly opposed to the dictum of certain philosophers that the value of gold is its 'cost of production,' and says this formula does not take into account the 'millions of human lives, the rivers of human tears, the oceans of human blood, the immeasurable amount of human anguish.'

This aspect of the case is set forth in powerfully written chapters on the plunder of America (by the Spaniards), of Africa (from the Roman Emperors to South African War), of Asia (by the Romans, Portuguese and the British), and of China in all ages; chapters showing great historical research and learning. The author's arraignment of Spain is particularly interesting at this epoch: "Besides despoiling aboriginal America of her gold and silver, Spain accomplished nothing in the New World except extermination and destruction. She swept away half as many human lives as all Europe contained at the period of the discovery of America. She destroyed every memorial of the Aztec and Peruvian civilizations. She disfigured the entire face of Central and South America. And she planted nothing

in the place of what she destroyed save a race laden with disadvantages and a few mission churches crumbling to decay. The spoil she obtained amounted altogether to some seven thousand millions of dollars." And all this cost the conquerors practically nothing in comparison. And here again the author remarks, "the value of these precious metals is *not* due to the cost of production, but to their usefulness and their quality, to the relation of supply to demand."

It is gratifying to note that Christian civilization now adopts different methods and "the acquisition of the precious metals by means of conquest is virtually over."

The volume is so crowded with facts, as well as with the results of thought and argument, that no ordinary book review can do the author justice; in the words of those who reviewed the first (incomplete) edition, it 'abounds with vivid description and practical knowledge; it is replete with information, and evinces much care and study; it is able and exhaustive; of the highest scientific value, yet readable as a novel.'

In the chapter on 'Production, Consumption and Stocks of Metal' the author does not conceal his poor opinion of the 'defective and misleading statistics of the Mint Bureau,' supported in its methods by Congress, and reflecting 'the narrow views of the Mint Director.' Valuable features are the chronological summaries, the bibliography (with press marks of the British Museum Library) and the index. The volume is clearly printed on good paper, probably in England, as we observe the words 'honour,' 'labour' and 'negros,' instead of the more familiar 'negroes.' There are two illustrations, a mining scene in California and a portrait of General Nelson A. Miles, who is casually mentioned in the text.

The volume is of the highest value.

HENRY CARRINGTON BOLTON.

SOCIETIES AND ACADEMIES.

CALENDAR.

The American Association for the Advancement of Science. A meeting of the council will be held at the Quadrangle Club, University of Chicago, on the afternoon of January 1. Sec-

tion H (Anthropology) will meet at the Field Columbian Museum, Chicago, on December 31 and January 1. The next regular meeting of the Association will be held at Pittsburgh, Pa., from June 28 to July 3. A winter meeting is planned to be held at Washington, during the convocation week of 1902-3.

The American Society of Naturalists will hold its annual meeting at the University of Chicago on December 31 and January 1. In conjunction with it will meet the Naturalists of the Central States and several affiliated societies, including The American Morphological Society, The American Physiological Society, December 30 and 31, The American Psychological Association and the Western Philosophical Association, December 31 and January 1 and 2.

PHILOSOPHICAL SOCIETY OF WASHINGTON.

THE 538th meeting was held October 12, 1901.

An obituary notice of Mr. C. A. Schott, for many years chief of the computing division of the Coast and Geodetic Survey, was read by Superintendent O. H. Tittmann; and Mr. R. A. Fessenden presented, through Mr. Winston, a paper on 'Progress in Practical and Theoretical Electricity' giving a rapid sketch of the condition of all the great branches of electricity.

The 539th meeting was held October 26, 1901.

Mr. Marcus Baker described 'A Dictionary of Alaskan Names,' now in press, to be published by the U. S. Geological Survey, pointing out its characteristics and the principles on which it is made. It will contain about 6,500 adopted names, 3,000 obsolete names and cross-references and 60 pages devoted to a catalogue of authorities with brief accounts of the explorers. Dr. Dall spoke appreciatively of the work.

Mr. C. H. Hinton, of the Nautical Almanac Office, then read by invitation a paper on 'A Fourth Dimension in Space demanded by Electrical Phenomena.' The paper cannot be summarized, but may be characterized as an attempt to apply to 4-space some principles of quaternions developed for 3-space.

The 540th regular meeting was held November 9, 1901, Vice-President Adler in the chair.

Mr. Hinton continued the presentation of his